

REMARKS

As an initial matter, Applicant gratefully acknowledges the Examiner's determination that claims 2-4 contain allowable subject matter (Office Action dated December 15, 2004, at 3, lines 1-4).

Claims 2 and 3 have been canceled without prejudice. Claims 1 and 4 have been amended, and new claims 5 and 6 have been added. Specifically, claim 1 has been amended to improve punctuation and form, which has no limiting affect on the scope of this claim. Claim 4 has been amended to depend upon new claim 5.

New claim 5 corresponds to original claim 2 but re-written in independent form incorporating the subject matter of original claims 1 and 2. Thus, new claim 5 has the same scope as original claim 2. New claim 6 corresponds to original claim 3 but re-written in independent form incorporating the subject matter of original claims 1 and 3. Thus, new claim 6 has the same scope as original claim 3.

The present amendment adds no new matter to the application.

The Invention

The present invention pertains broadly to a cooled turbine blade such as would be used in a turbo jet engine. In particular, in one embodiment of the present invention, a thin-walled lightweight cooled turbine blade is provided having all of the features recited in claim 1. In another embodiment of the present invention, a thin-walled lightweight cooled turbine blade is provided having all of the features recited in claim 5. In yet another embodiment of the present invention, a thin-walled lightweight cooled turbine blade is provided having all of the features recited in claim 6.

All of the turbine blade embodiments of the present invention have the advantage that they are lighter in weight and can achieve higher rotational speeds due to a recess portion formed by the belly side of the middle blade portion.

The Rejection

Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by Kercher (U.S. Patent 3,542,486).

Applicant respectfully traverses this rejection and requests reconsideration of the instant application for the following reasons.

Applicant's Arguments

Claims 4-6 are allowable for the reasons of record.

The Prior Art Rejection

Anticipation under 35 U.S.C. § 102 requires showing the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim. Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). In the present case, U.S. Patent 3,542,486 to Kercher (hereafter the "Kercher Patent") does not teach each and every element of claim 1, arranged as in the claim.

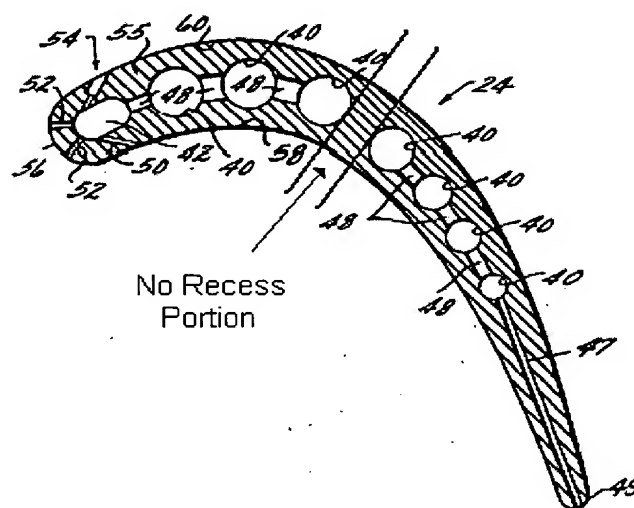
The Kercher Patent

The Kercher Patent teaches "film cooling of structural members in gas turbine

engines,” wherein a turbine blade (24), as shown in Figures 2 and 3, includes a root portion (44) having at least one radially extending passage (46) formed therein to communicate with a plurality of plenum chambers (40), (42). As shown in Figure 3, chordwise extending passages (48) may be provided for delivering cooling fluid to plenum chambers (40), (42) not in direct communication with passages (46), and chordwise extending passages (47) communicate with one of the plenum chambers (40) for providing convection cooling of the blade trailing edge (49). As also shown in Figure 3, a plurality of coolant efflux holes (50), (52), (54) are provided through the blade sidewall (55) at, and adjacent to, the blade leading edge (56) to communicate the leading plenum chamber (42) with the blade exterior surface.

However, the Kercher Patent does not teach, or even suggest, a “middle blade portion” that is a “solid structure” wherein “the belly side of the middle blade portion forms a recess portion towards the back side of the middle blade portion” as recited in claim 1.

To illustrate this point, Applicant provides below a modified version of Figure 3 of the Kercher Patent, which is labeled as “Sketch 3.”



Sketch 3

Sketch 3 shown above corresponds to Figure 3 of the Kercher Patent except that two dark parallel lines are drawn to designate a solid “middle portion” in accordance with the drawing provided on page 2 of the Office Action dated December 15, 2004. As evident from Sketch 3, the “middle portion” of the turbine blade taught by the Kercher Patent has no “recess portion” as recited in claim 1 of the present invention. The Random House Webster’s college dictionary 1991, at 1125, establishes the following: “**recess...3.** a receding part or space...**4.** an indentation....”

The “middle portion” of the turbine blade (24) taught by the Kercher Patent has no structure reasonably construable as a “recess portion” as recited in claim 1 of the present invention. Specifically, as shown in Figure 3 of the present application, the “middle portion” is shown as including a “receding part or space.” As shown in Figure 4 of the present application, the “middle portion” is shown as including an “indentation.” On the other hand, as evident from Sketch 3 above, the “middle portion” of the turbine blade (24) taught by the Kercher Patent includes neither a “receding part or space” nor an “indentation.” Therefore, the Kercher Patent does not teach, or even suggest, a “recess portion” as recited in claim 1 of the present application.

Furthermore, the Kercher Patent fails to teach, or even suggest, that the structure of the turbine blade causes “high-temperature gas flowing on the belly side of the blade” to branch “thereby forming a separation region” as also recited in claim 1 of the present application.

In other words, because the Kercher Patent does not teach, or even suggest, (i) a “turbine blade comprising... a recess portion” wherein the structure of the turbine blade causes (ii) “high-temperature gas flowing on the belly side of the blade” to branch “thereby

forming a separation region” as recited in claim 1 of the present invention, the Section 102 rejection is untenable and must be withdrawn.

Conclusion

Claims 4-6 are allowable for the reasons of record.

The rejection standing against claim 1 under 35 U.S.C. § 102(b) is untenable and must be withdrawn because the Kercher Patent does not teach, or even suggest, (i) a “turbine blade comprising... a recess portion” wherein the structure of the turbine blade causes (ii) “high-temperature gas flowing on the belly side of the blade” to branch “thereby forming a separation region” as recited in claim 1 of the present invention.

For all of the above reasons, claim 1 and 4-6 are in condition for allowance, and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below signed attorney of record for the Applicants.

Respectfully submitted,

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